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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,527	02/21/2002	David P. Rossum	017002-003890US	9363

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EXAMINER

WARREN, DAVID S

ART UNIT PAPER NUMBER

2837

DATE MAILED: 09/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/080,527

Applicant(s)

ROSSUM, DAVID P.

Examiner

David S. Warren

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-24 and 36-38 is/are allowed.
- 6) ☐ Claim(s) 25-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 25 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Ogawa et al. (5050474). Ogawa shows the use of a memory (10, 20) for storing “N waveform memory samples” for each channel (in this case, the examiner considers Ogawa to use $N = 1$; see column 9, lines 1 – 3). The use of a cache memory is considered equivalent to the “working” memory 10 and the waveform memory 20. The use of control logic to access waveform memory samples is shown by element 22 and/or is inherent in element 24 (since all memory sample data will be read out). Ogawa also shows the use of “Nth order interpolation on the waveform memory samples” (see col. 11, claim 11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26 – 32, 34, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view of Hanzawa et al. (4667556). The teachings of Ogawa have been discussed supra. Regarding claims 26 and 34, Ogawa does not show asynchronous operation of memory access. Hanzawa shows that CPU (11) timing is asynchronous to the timing of the tone source control unit (14) (col. 7, lines 15-18). The asynchronous timings of Hanzawa can be seen by comparing figs. 8 and 6 (note: ϕ_s , ϕ_w in both figures). Regarding claims 27 and 35, Ogawa does not disclose the use of a bus request signal. Hanzawa discloses the use of a bus request signal to access memory and initiate interpolation (col. 7, first paragraph; RQ). Regarding claim 28, Hanzawa shows "disabling" the waveform memory circuit via a "busy" signal (col. 7, line 28). Regarding claim 29, buses AB, DB, and CB appear to be shared by instrument 12 (via CPU 11) and waveform memory (144) within the tone control circuit (14). Regarding claims 30 and 31, overwriting data within a cache (or working) memory is inherent in any "temporary" storage means – see element 52 of figure 4 (note that the output of 143 controls both the interpolation section 146 and waveform memory section 144). Regarding claim 32, Hanzawa discloses the use of more significant bits and less

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significant bits (i.e., "upper" and "lower"; col. 7, line 14). In fig. 8, "line" 9, the upper (U8BIT) and lower bits (L8BIT) appear to provide channel data (CH1) and pitch data.

Allowable Subject Matter

Claims 14 – 24 and 36 – 38 are allowed. Regarding independent claims 14, 18, and 19, the prior art does not show the use of "storing two or more waveform memory samples for each channel" nor the use of "linearly interpolating between two adjacent waveform memory samples." Regarding independent claim 36, the prior art does not show the use of generating coefficients for each channel, computing a sum of N products of the contents of the waveform memory times the coefficients for the of several ones of the channels, nor an interpolator circuit for producing a bus request signal responsive to a bus acknowledge signal.

Conclusion

The terminal disclaimer filed on June 6, 2003, disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 6,137,043 has been reviewed and is accepted. The terminal disclaimer has been recorded.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The patent to Gallitzendorfer ('672) shows the use of interpolating sampled waveform memory signals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Warren whose telephone number is 703-308-5234. The examiner can normally be reached on M-F, 9:30 A.M. to 6:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on 703-308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-9529 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

dsw
September 2, 2003


ROBERT E. NAPPI
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